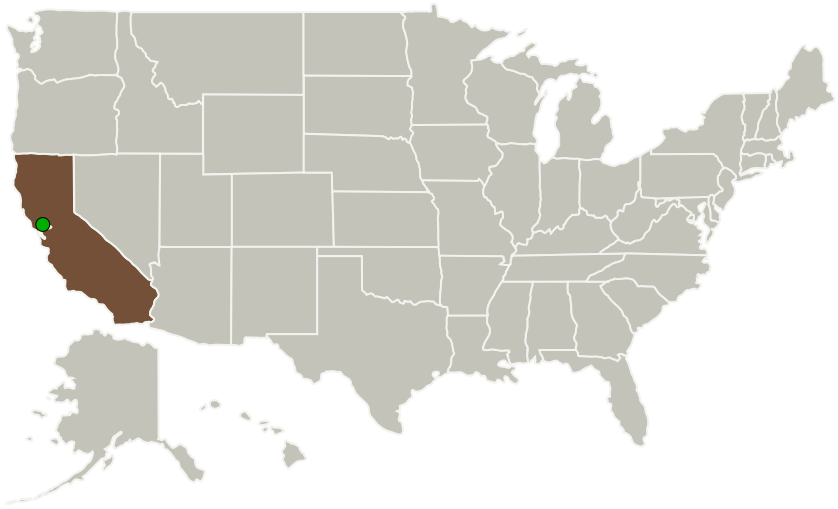
Novel Surveillance Technologies for Airport Ramp Area Operations, Phase II

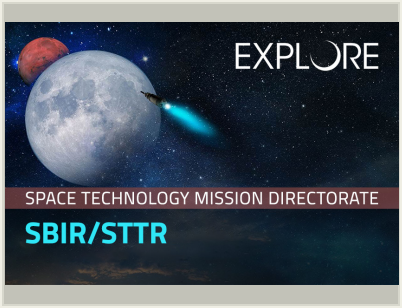
Completed Technology Project (2013 - 2016)

Project Introduction

The objective of the current research is to develop the concept, algorithms and software necessary for enabling a novel surveillance system for airports ramp areas. The proposed technology can overcome the deficiencies of some of current-day surveillance systems especially in the ramp area. It is expected to aid in both Safety and Efficiency improvements in ramp area operations. Phase I research developed the concept and requirements and demonstrated the core algorithms of technology. Using a 1:400 scale realistic airport ramp area model the following features were demonstrated: (i) detection of aircraft in the ramp area and (iii) 3D localization of aircraft 3D inertial frame of reference to an accuracy of 40 ft. Phase II research seeks to refine and extend the detection algorithms to include ground vehicles; identify aircraft type; and even determine the orientation of the aircraft. The localization algorithms will be extended to decipher the 3D geometry of the aircraft. Data fusion algorithms will be developed to track aircraft as they move through the ramp area. A significant portion of Phase II research involves development of the complete software and testing it using realistic airport data.

Primary U.S. Work Locations and Key Partners





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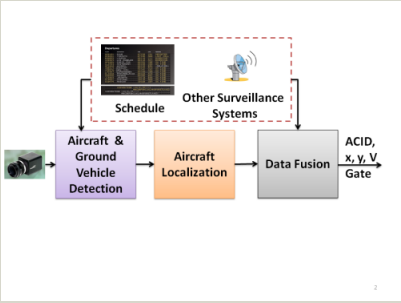
Organizations Performing Work	Role	Type	Location
Optimal Synthesis, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Los Altos, California
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations
California

Images



Briefing Chart
Novel Surveillance Technologies for Airport Ramp Area Operations, Phase II
(https://techport.nasa.gov/image/135740)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Optimal Synthesis, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

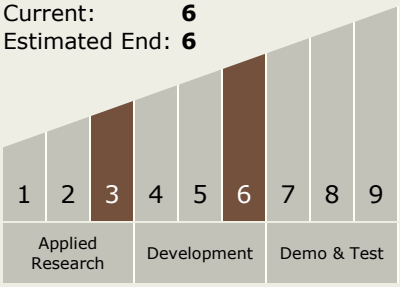
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Hui-ling Lu

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.6 Advanced Atmospheric Flight Vehicles

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System